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10/010,620	12/06/2001	Jeffrey David Shelley	KCC-15,814	6625

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EXAMINER

COLE, ELIZABETH M

ART UNIT PAPER NUMBER

1771

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 0526

Application Number: 10/010,620  
Filing Date: December 06, 2001  
Appellant(s): SHELLEY ET AL.

Roland Norris  
For Appellant

**EXAMINER'S ANSWER**

**MAILED**

**MAY 28 2004**

**GROUP 1700**

This is in response to the appeal brief filed May 15, 2004.

**(1) *Real Party in Interest***

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A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 7-11, 13, 15-20 (Group 1) and 21-25, 27, 29-38 (Group 2), do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8). The examiner agrees that the process claims of Group 1 stand or fall together and that the product claims of Group 2 would also stand or fall together because the process claims include a particular order of steps which are not included in the product claims.

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

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**(9) Prior Art of Record**

5,707,468	ARNOLD et al	1-1998
4,359,445	KANE et al	11-1982

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 7-11, 13, 15-27, 29-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arnold et al, U.S. Patent NO. 5,707,468 in view of Kane et al, U.S. Patent No. 4,359,445. Arnold et al discloses a method of making a nonwoven fabric comprising depositing a nonwoven layer such as spunbonded nonwoven on to a belt, (col. 6, lines 32-50), subjecting it to a hot air knife in order to impart sufficient structural integrity to the layer to allow it to be processed. (col. 6, lines 50-55) and depositing additional nonwoven layers on to the first nonwoven fabric, (col 4, lines 50-65 and col. 7, lines 1-37). The layers of the nonwoven fabric may also be subjected to more substantial bonding such as hydroentanglement, needling, ultrasonic bonding, through air bonding, adhesive bonding and thermal point bonding or calendaring, (col. 4, lines 58-65). Arnold teaches that compacted nonwoven fabrics are less desirable because of their decrease in bulk or loft, (col. 1, lines 23-27). Arnold et al teaches that the use of the hot air knife prevents compacting the nonwoven and results in a particularly lofty nonwoven because the hot air knife is applied to the fabric for such a brief period of time that no melting of the fibers occurs, (col. 5, lines 25-30 and col. 6, lines 17-21). Arnold et al differs from the claimed invention because Arnold does not teach that some of the layers should comprise crimped homopolymeric continuous fibers. Kane et al teaches that particularly lofty nonwoven fabrics may be formed by extruding crimpable homopolymeric continuous fibers and then heat treating the fibers to crimp

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them. See col. 1, lines 35-59; col 2, lines 4-14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the fabric of Arnold et al so that it comprised layers that comprised the crimped homopolymeric fibers of Kane et al. One of ordinary skill in the art would have been motivated to employ the fibers of Kane et al because Kane et al teaches that these fibers produce a particularly lofty web (col and Arnold et al is particularly concerned with forming a lofty, non-compressed web. With regard to the processing temperatures and line speeds, Arnold teaches that the hot air knife operates at a temperature of 220-550 F while Kane teaches col. 6, lines 43-50, that the velocity of the air during the crimping process may be at 200 feet per minute. With regard to the limitation that the crimped fibers are helical, either the fibers of Kane would inherently be helical due to their crimping, or else it would have been obvious to have selected the particular asymmetric shape of the extruded fibers so that it would produce the desired degree of crimping and shape of the crimped fiber since Kane recognizes that the crimping of the fibers is due to the fibers having an asymmetric cross section. See col. 2, lines 23-27 and col. 6, lines 51-65.

**(11) Response to Argument**

With regard to the product claims, Appellant argues that the Arnold and Kane references are not properly combinable because the references lack any suggestion for such a combination of the laminate of Arnold and the lofted mat of fibers of Kane. However, Arnold is directed towards producing lofty nonwoven fabrics which comprise spunbonded nonwoven fabrics which may be combined with additional fabric layers. Kane teaches that crimped, homopolymeric fibers produce particularly lofty nonwoven fabrics. Therefore, it would have been obvious to have employed the nonwoven fabric produced by Kane which comprised the crimped,

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homopolymeric fibers as one of the additional fabric layers in Arnold, motivated by the expectation that this would produce a particularly lofty nonwoven fabric laminate.

With regard to the process claims, Appellant argues that the application of the hot air knife of Arnold is not taught as suitable for crimping the latently crimped fibers of Kane. However, the rejection does not rely on the hot air knife of Arnold for crimping the fibers of Kane. The claims recite "depositing a second layer of crimped homofilaments connected to the first layer". Thus, the crimping step could take place before deposition, and therefore the hot air knife of Arnold would not crimp the fibers, but instead the fibers would be already crimped by the process of Kane when deposited. Similarly, the fact that the crimping step of Kane occurs under different conditions than the application of the hot air knife in Arnold would not preclude the combination because the two process steps perform different functions and occur at different points in the process.

Related to the arguments regarding the application of the hot air knife, Appellant asserts that Arnold teaches employing the hot air knife to melt bond the spunbonded layers, (page 6, lines 8-9 and footnote 1). However, Arnold states at col. 5, lines 26-30 that the temperature employed is "insufficient to melt the polymer in the fiber but sufficient to soften it slightly" and at col. 6, lines 17-21 that "Though the instant invention may use air temperatures above the melting points [of] the polymer, the surface of the polymer does not reach its melting point by controlling the air flow rate and maintaining the web's exposure within the specified time range." Therefore, Appellant's contention that Arnold melts the fibers is in error.

Appellant argues that Kane uses a foraminous belt and that such a belt would be seen by one of ordinary skill in the art to be necessary for properly crimping the fibers. However, as set forth above, the crimping step is separate from the application of the hot air knife.

Appellant argues that in order to combine references there must be something either in the references or in the art to lead to an expectation of success in the combination. However, the motivation to combine the references is that Arnold teaches forming a lofty nonwoven and Kane teaches that crimped, homopolymeric fibers produce particularly lofty nonwovens.

Appellant argues that depositing the latently crimpable fibers of Kane onto the nonwoven spunbonded layer of Arnold would preclude the application of heat to crimp the crimpable fibers, since in Kane the crimping is done on a foraminous belt, while here the nonwoven layer of Arnold would be between the foraminous belt and the crimpable fibers. However, the fibers can be crimped prior to being placed onto the belt (or wire) on top of the nonwoven layer formed by the method of Arnold.

Appellant argues that the advisory action of 1/15/04 set forth a new position regarding the rejection. The advisory action was stating that the crimped fibers do not have to be deposited in the uncrimped state, i.e., they may be deposited already crimped. This is what is meant by the statement that the claims as currently presented do not require that the crimped layer be formed directly on the first layer or that it be crimped directly on the first layer. The claims would encompass forming the crimped fibers and then depositing already crimped fibers onto the first layer. Further, the limitation the steps are done "in the order of" does not preclude additional steps. Appellant argues that the phrase "connected to" as taught at pages 18-20 of the specification requires the first and second layers to be coextensive. However, as stated above,

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the statement in the advisory action was meant to clarify that the claims do not require crimping the deposited fibers on the first layer, but rather depositing a layer of crimped homofilament fibers, not that the fibers were not connected or coextensive with each other. As a side note, the limitation "depositing a second layer of crimped homofilament fibers connected to the first layer while the first layer remains on the wire" was interpreted as meaning that the first and second layers were in contact with each other, not that the second layer was somehow connected to the first layer before the second layer was deposited. With regard to the second statement from the advisory action, regarding the heat setting step, it is Arnold, not Kane which teaches subjecting the additionally applied layers to an additional hot air knife treatment in order to impart structural integrity to the fabric. See col. 7, lines 21-24 of Arnold.

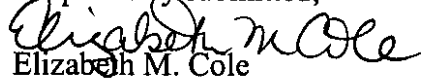
With regard to the laminate itself, Appellant argues that "no suggestion is given to achieve the claimed "lofty second nonwoven layer having stable, uncompacted crimped homofilament fibers substantially free of melt bonding and having sufficient integrity to withstand high speed web transfer" by any reasonable combination of the methods set forth in Arnold or Kane". However, the article claims contain no method steps. The Arnold reference clearly teaches providing additional layers, including woven, nonwoven, papers and films which may be bonded with the original Arnold spunbonded nonwoven layer to which sufficient integrity is imparted by means of a hot air knife without melting the fibers. Arnold clearly teaches the desirability of loftiness in a nonwoven fabric. Kane teaches crimped, homopolymeric fibers produce particularly loft nonwovens. It would have been obvious to have included a layer of the Kane fabric into the laminate of Arnold, motivated by the expectation that the addition of the Kane fabric would further enhance the loftiness of the nonwoven. The

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methods do not have to be in any way combinable for the fabric of Kane to be added to the fabric of Arnold because Arnold clearly teaches incorporating additional fabric layers to the laminate at col. 7, lines 1-25.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

  
Elizabeth M. Cole

Primary Examiner


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e.m.c.

May 26, 2004

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